

NAME: _____

DATE: _____

1. Change $\log_a b = c$ to exponential form.

- A. $b = a^c$
 B. $b = c^a$
 C. $a = b^c$
 D. $a = c^b$

3. Change $a = b^c$ to logarithmic form.

- A. $\log_a b = c$
 B. $\log_b c = a$
 C. $\log_c a = b$
 D. $\log_b a = c$

2. Change to exponential form: $\log_x 125 = \frac{3}{2}$

- A. $125 = x^{\frac{3}{2}}$
 B. $125 = \left(\frac{3}{2}\right)^x$
 C. $x^{125} = \frac{3}{2}$
 D. $125^{\frac{3}{2}} = x$

4. Determine an equivalent expression for $\log P - \log Q$.

- A. $\log(P - Q)$
 B. $\log PQ$
 C. $\log \frac{P}{Q}$
 D. $\frac{\log P}{\log Q}$

5. If $\log 3 = x$ and $\log 2 = y$, find each logarithm in terms of x and y :

a) $\log 9 = \log(3 \times 3) = \log 3 + \log 3 = 2x$

(b) $\log \left(\frac{1}{4}\right) = \log 1 - \log 4 = 0 - \log 2^2 = -2 \log 2 = -2y$

c) $\log 36 = \log(9 \times 4) = \log 9 + \log 4 = 2x + 2y$

(d) $\log 300 = \log 3 + \log 100 = x + 2$

e) $\log .002 = \log \left(\frac{2}{1000}\right) = \log 2 - \log 1000 = y - 3$

(f) $\log_2 3 = \frac{\log 3}{\log 2} = \frac{x}{y}$

6. If $\log_5 4 = x$, find each logarithm in terms of x :

a) $\log_5 16 = \log_5 4^2 = 2 \log_5 4 = 2x$

(b) $\log_5 80 = \log_5 (5 \cdot 16) = \log_5 5 + \log_5 16 = 1 + 2x$

c) $\log_{25} 4 = \frac{\log_5 4}{\log_5 25} = \frac{x}{2}$

(d) $\log_5 8 = \log_5 (4 \times 2) = \log_5 4 + \log_5 2 = \frac{x}{2} + \frac{1}{2} = \frac{x+1}{2}$